McNeil Technologies

Delivering Mission Critical Support Services

Future Renewable Energy Supply and Federal Renewable Energy Goals

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Proposed Energy Bill Goals

Fiscal Year	House Proposed Percentage	GWh
2005-2007	3%	1,650 GWh
2008-2010	5%	2,750 GWh
2011 and beyond	7.5%	4,125 GWh

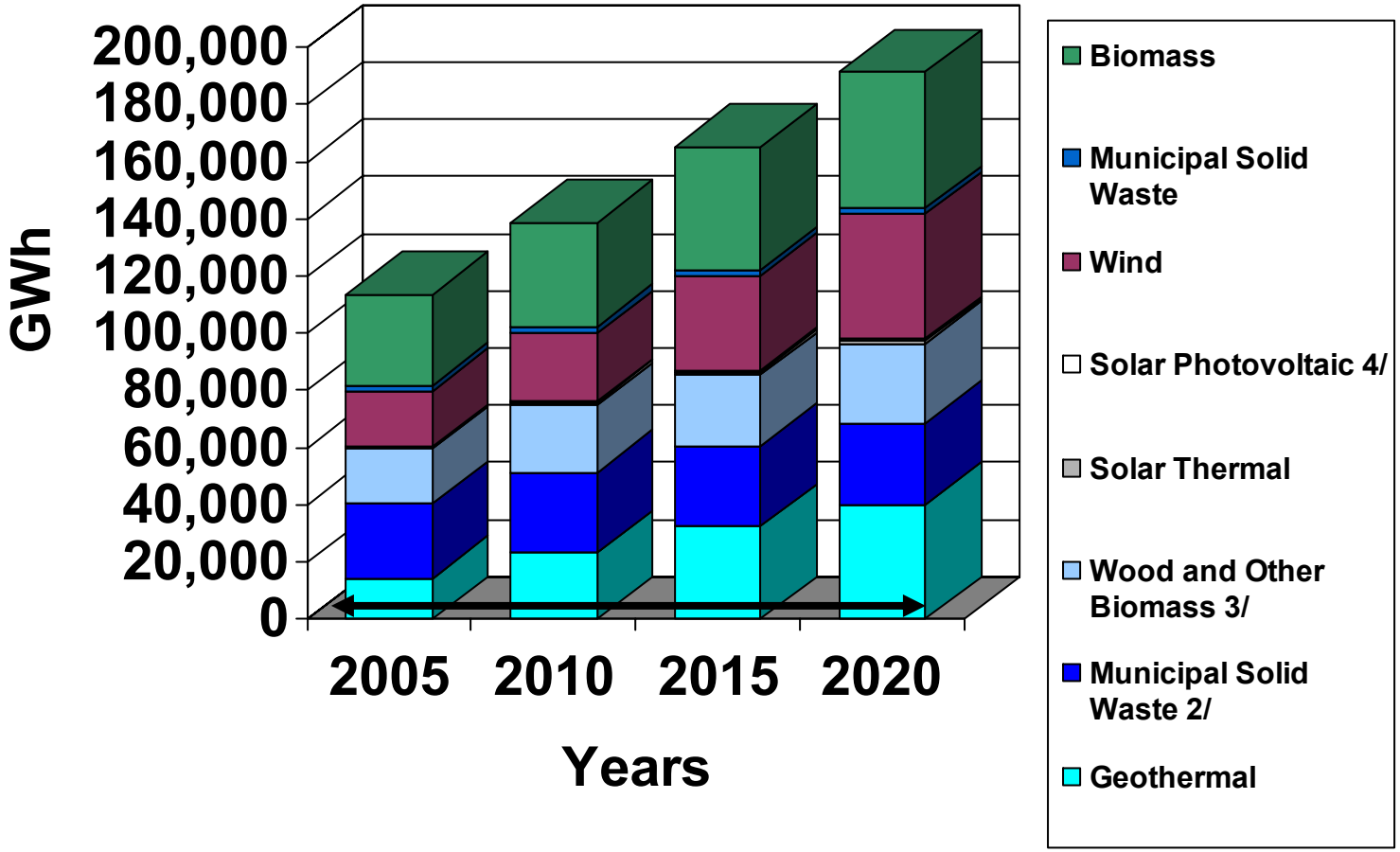
EIA Forecast Cases

	2005		2010		2020	
EIA Forecast Cases	Reference	High	Reference	High	Reference	High
Total Non-Hydropower Generation (GWh)	113,703	115,075	138,869	146,716	191,409	233,627

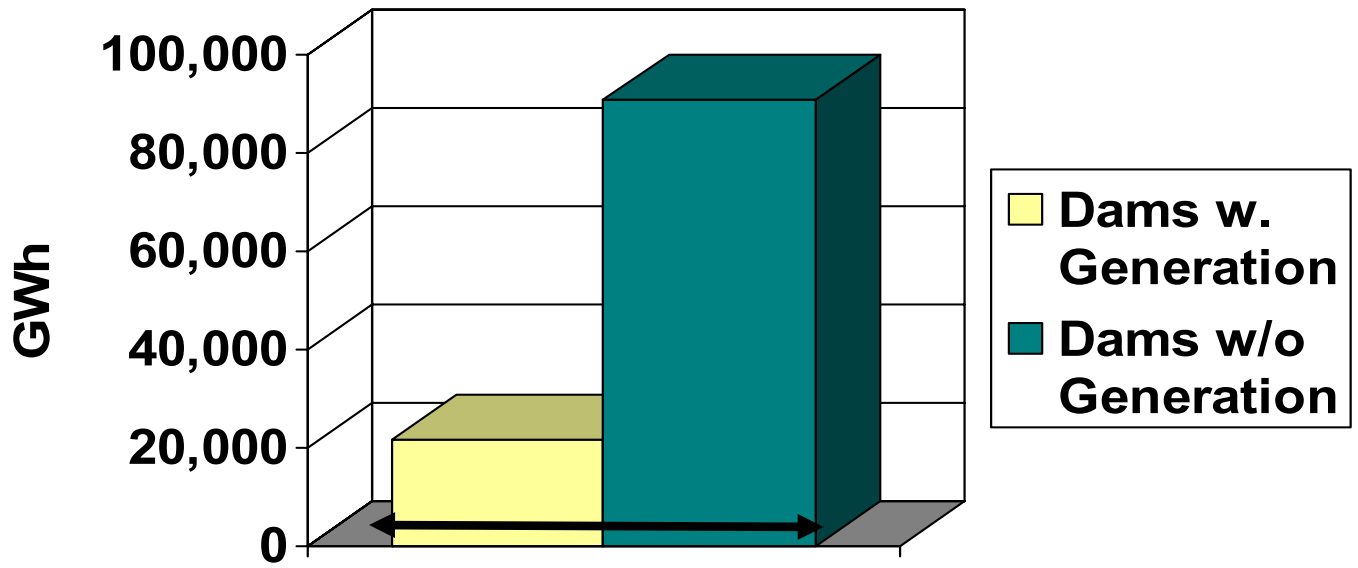
Growth in Non-Hydropower Renewable Energy Generation

EIA Reference Case			
Year	2010	2015	2020
Additions to Renewable Energy (GWh)	25,170	26,260	26,280

Growth in Non-Hydro Renewable Energy Generation Compared to Highest Level of Proposed Federal Goal



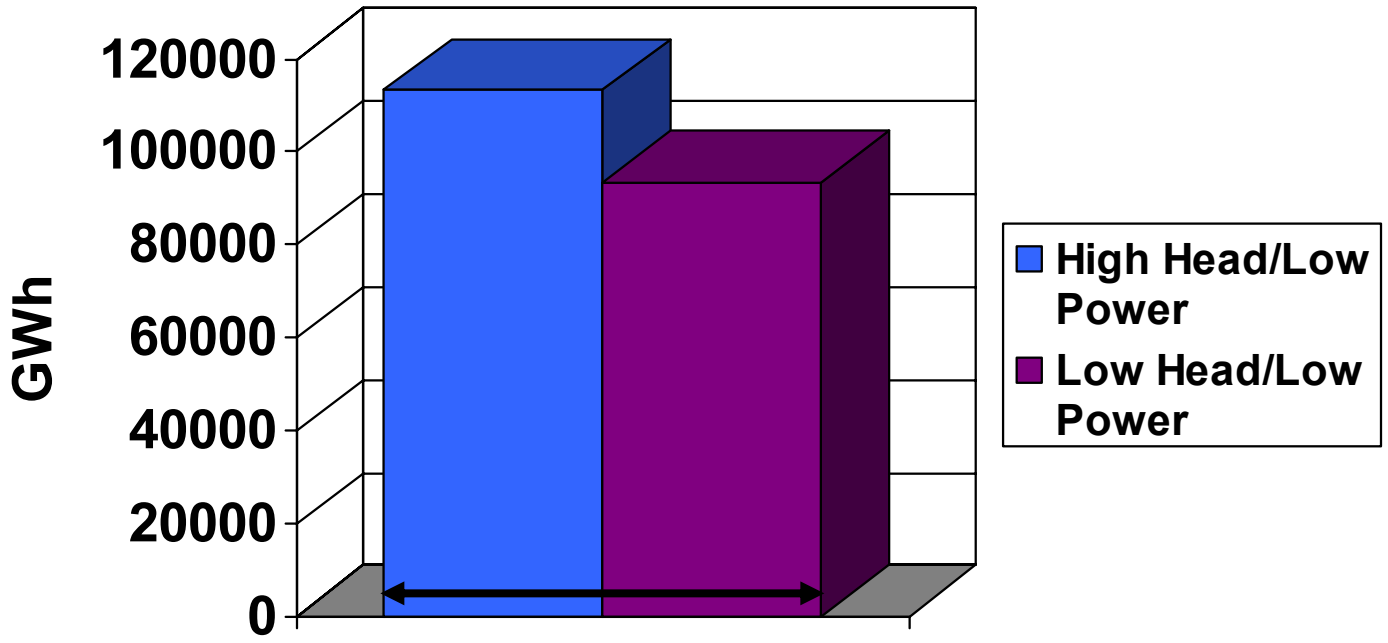
Potential from New Hydropower Generation Compared to Highest Proposed Federal Renewable Energy Goal



Potential Incremental Hydropower Capacity and Median Development Costs

Type of Site	Number of Sites	Total Capacity (GWh)	Median Unit Cost to Develop Sites (2002$/kW)	Median Unit Cost to Develop Site Capacity (2002$/kW)
Undeveloped	965	76,076	3,600	2,700
Dams without power	1,026	90,881	2,000	1,200
Dams with power	164	21,536	1,200	700
All	2,155	188,493	2,600	1,600

Low Impact Hydropower Potential and Highest Level of the Proposed Federal Renewable Energy Goal

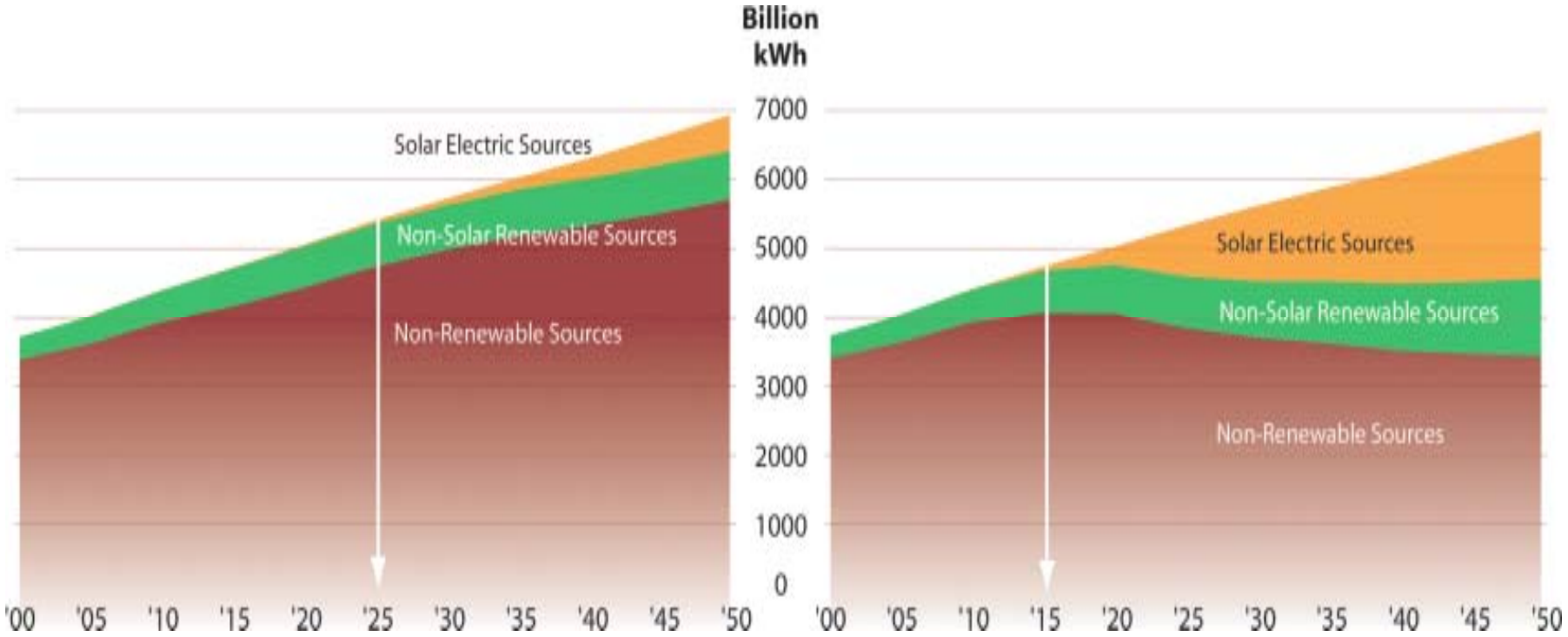


INEEL's Water Energy Resource Assessment of the United States

Annual Mean Power (GWh)	Total	Developed	Excluded	Available[a]
TOTAL POWER	1,269,066	155,179	388,773	725,113
TOTAL HIGH POWER	1,006,498	151,530	336,664	518,303
High Head/High Power	691,041	146,393	242,932	301,716
Low Head/High Power	315,456	5,138	93,732	216,587
TOTAL LOW POWER	262,568	3,649	52,109	206,810
High Head/Low Power	155,065	1,634	40,134	113,302
Low Head/Low Power	107,503	2,019	11,975	93,513
Conventional Turbine	37,099	1,397	3,938	31,768
Unconventional	17,222	188	2,308	14,726
Microhydro	53,182	434	5,729	47,019

a. No feasibility or availability assessments were performed.

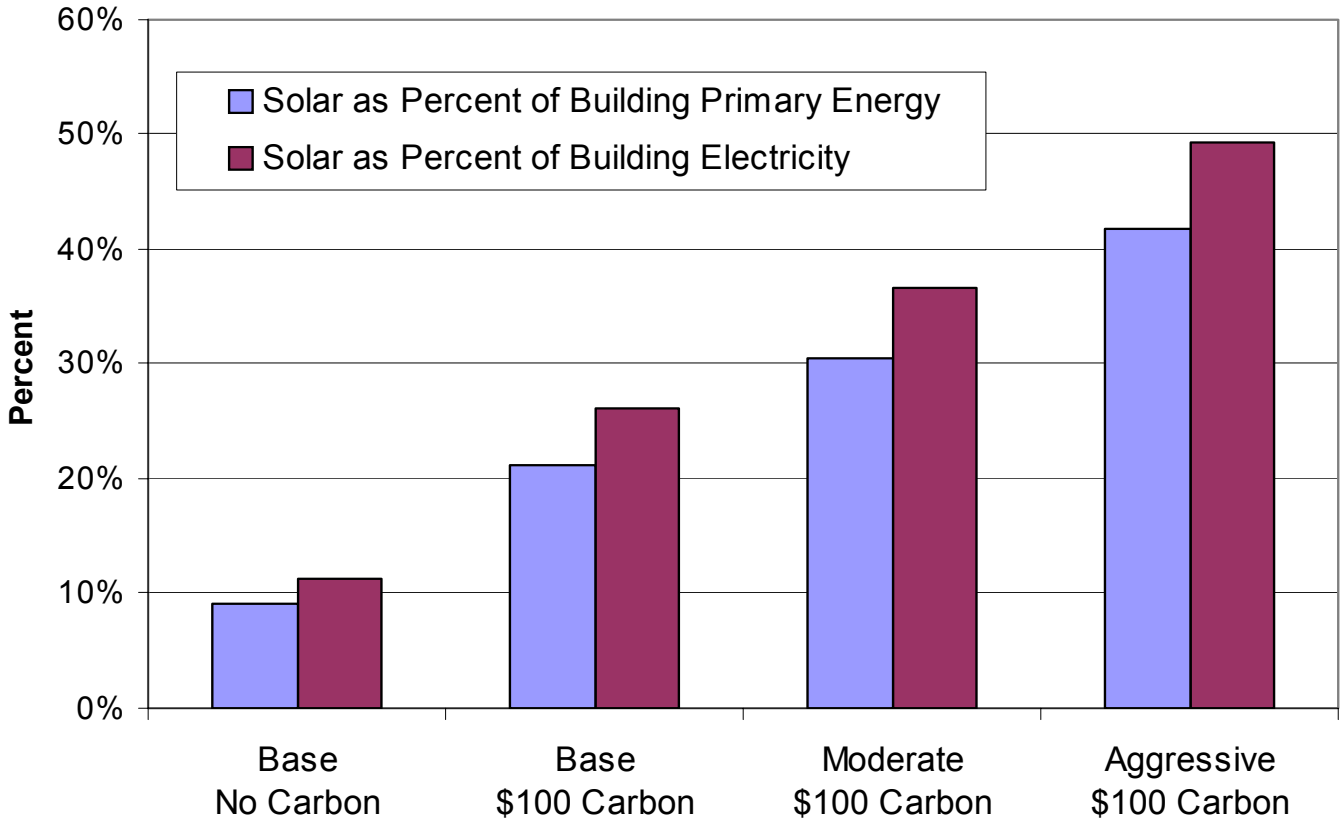
Solar Potential to 2050



In an analysis performed by the National Renewable Energy Laboratory, generation of electricity (in billion kWh) is shown from 2000 to 2050 under the Baseline scenario (left) and Aggressive Policies scenario (right). Generation is broken out for solar electric, non-solar renewable, and non-renewable sources.

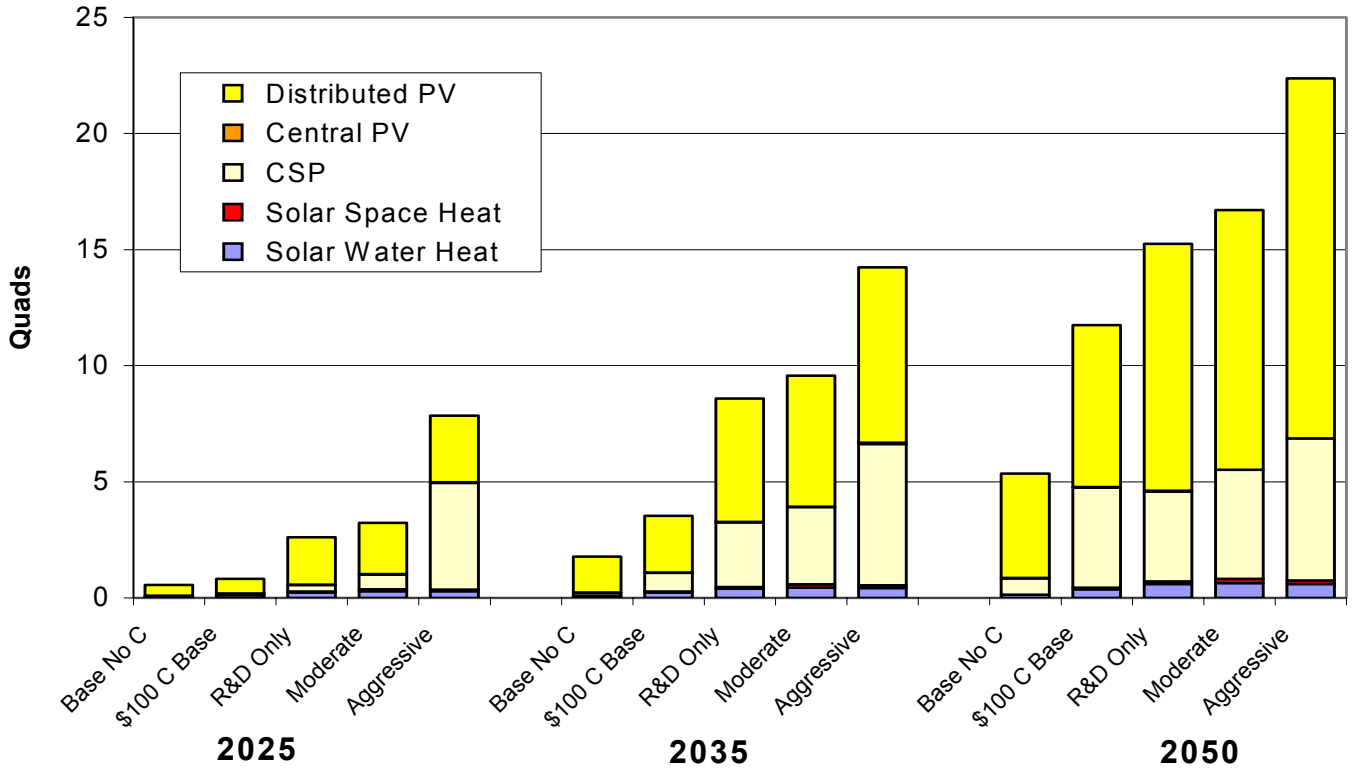
Solar Contribution in 2050

- With aggressive policies to promote solar technologies, solar could supply roughly half of the electricity demand in buildings by 2050.



Solar Potential with Enhanced R&D Policies

- Solar technologies displace 17 quads (moderate case) and 22 quads (aggressive case) of conventional energy by 2050.



Solar Contribution

(Solar generation valued at @10,280 Btu/kWh)

Summary

- Renewable energy supply is not as much of an issue as accessibility:
  - How much of it is spoken for in RPS and utility development plans?
  - What will be the price?
  - How accessible will it be to Federal customers – RECs, green power, in regions with Federal facilities?
  - How much budget and authority will agencies have to expand renewable energy use?
- The definition of renewable energy is important:
  - Electricity-only renewables leaves out a lot of potential – transportation fuels, thermal
  - Hydropower in or out
  - New technologies like wave and tidal power